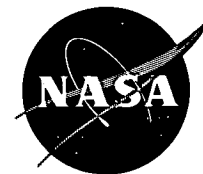


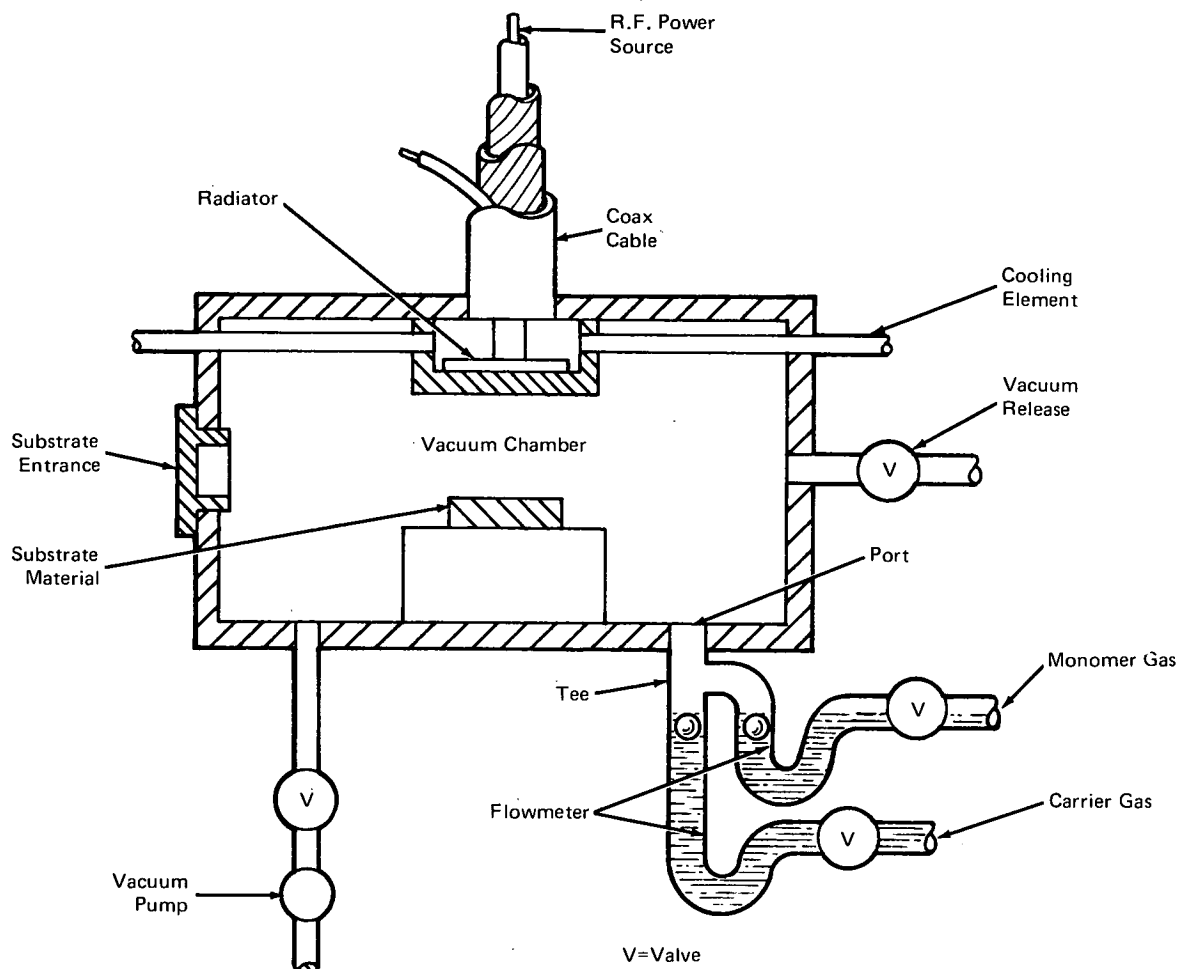
NASA TECH BRIEF

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Polymeric Coatings Using Electronic Excitation



The problem:

Presently many polymeric reactions are inhibited by the presence of oxygen.

The solution:

A process has been developed for glow discharge polymerization, which is accomplished in an inert atmosphere by utilizing a vacuum chamber. Polymeric coat-

ing, in this type of environment, produces high molecular weight coating polymers that have good stability and are resistant to abrasions and solvents.

How it's done:

A gaseous monomer enters an evacuated processing chamber and is mixed with a carrier gas. The carrier gas is electrically excited with radio frequency energy coming

(continued overleaf)

from an internal radiator. The excited gas, now glowing, bombards the gaseous monomer, which causes the monomer to deposit a polymerized protective coating on the surface of the substrate.

An evacuated chamber is used as shown in the diagram. This houses the substrate material to be coated. A radio frequency radiator is attached to the upper surface of the inner chamber wall. A coaxial cable links the radiator with an external rf power source. The connection allows the two gases to begin mixing prior to entering the chamber through the port opening. The flow rate of the gases is controlled by individual flow-meter valves.

Note:

Requests for further information may be directed to:
Technology Utilization Officer
NASA Headquarters
Code KT
Washington, D.C. 20546
Reference: TSP72-10257

Patent status:

Title to this invention has been waived under the provisions of the National Aeronautics and Space Act [42 U.S.C. 2457 (f)], to the North American Rockwell Corp. Anaheim, California.

Source: S. M. Lee of
North American Rockwell Corp.
under contract to
NASA Headquarters
(HQN-10698)